

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Appl. No. : 09/602,044 Confirmation No. 9040
Applicant : John Bronskill
Filed : 06/23/2000
Title : System and Method for Drawing and Painting with Warped Bitmap
: Brushes
Group Art Unit : 2672
Examiner : Jeffery A. Brier
Docket No. : MFCP.119835
Customer No. : 45809

Via EFS-Web Submission

Mail Stop Amendment
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

AMENDMENT

In response to the Office Action mailed 03/07/2006, please amend the above-identified application as follows:

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks begin on page 13 of this paper.

AMENDMENTS TO THE CLAIMS

Claims 19 and 38 are amended herein. This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) A method of drawing a brush stroke with a bitmap brush, the bitmap brush comprising a bitmap image having pixels, the brush stroke rendered relative to a guideline, the guideline specifying an arbitrary path for the brush stroke, the method implemented by a computing device and comprising:

determining a first polygon on the guideline; determining a first segment in the bitmap brush corresponding to the first polygon on the guideline, the first segment in the bitmap brush comprising a first portion of the bitmap image; applying a first transformation to the first portion of the bitmap image mapped in the first segment in the bitmap brush to generate a corresponding bitmap image in the first polygon on the guideline to create a first segment of the brush stroke; and displaying the first segment of the brush stroke on a display device.

2. (Original) The method of claim 1 wherein the step of determining the first polygon comprises:

making a piece-wise linear approximation of the curved guideline, the piece-wise approximation having a plurality of line segments that are connected end to end; generating sides of the first polygon at a first line segment in the plurality of line segments, by drawing lines of specified length at the endpoints of the first line segment at least at one specified angle to the first line segment; and connecting the ends of the lines of specified length to complete the first polygon.

3. (Previously Presented) The method of claim 2 wherein the step of generating sides of the first polygon comprises:

generating a first side at a specified angle to a first line segment in the plurality of line segments, the first side having two first endpoints defining a length corresponding to a first desired thickness of the brush stroke at one end of the first line segment; generating a second side at the specified angle to a second line segment in the plurality of line segments, and wherein the first line segment is adjacent to the second line segment, the second side having two second endpoints defining a length corresponding to a second desired thickness of the brush stroke at one end of the second line segment; and defining a first polygon having corners defined by the two first endpoints and the two second endpoints.

4. (Original) The method of claim 2 wherein the step of generating sides of the first polygon comprises:

generating a first side, the first side having two first endpoints defining a length corresponding to a first desired thickness of the brush stroke at one end of the first line segment, wherein, furthermore, the first side dividing the angle between the first line segment in the guideline and an adjacent second line segment in the guideline; generating a second side, the second side having two second endpoints defining a length corresponding to a second desired thickness of the brush stroke at one end of the second line segment, wherein, furthermore, the second side dividing the angle between the second line segment in the guideline and an adjacent third line segment in the guideline; and defining a polygon having corners defined by the two first endpoints and the two second endpoints.

5. (Original) The method of claim 4 wherein the first side bisects the angle between the first line segment in the guideline and the adjacent second line segment in the guideline.

6. (Original) The method of claim 1 wherein the guideline forms a closed loop.

7. (Original) The method of claim 1 wherein the first transformation is a bilinear transformation.

8. (Original) The method of claim 7 wherein one of corner points of the first polygon is used to generate at least one parameter for the bilinear transformation.

9. (Original) The method of claim 1 wherein the first transformation is a texture mapping.

10. (Original) The method of claim 1 wherein a desired thickness for the brush stroke at a point on the curved guideline corresponds to a separation between a first line and a second line in the guideline.

11. (Original) The method of claim 2 wherein the step of making a piece-wise linear approximation of the guideline comprises:

selecting one of the lines in the guideline; and generating end to end connected linear segments, each of the linear segments approximating a segment of the selected line in the guideline.

12. (Original) The method of claim 11 wherein the step of generating end-to-end connected linear segments further includes dividing a linear segment into additional end-to-end connected linear segments in response to a user selection.

13. (Previously Presented) The method of claim 11 wherein the guideline has two lines specifying the thickness of the brush stroke, wherein furthermore the step of determining a first polygon comprises selecting a segment in one of the lines specifying the thickness of the brush stroke, and selecting another line segment in another of the lines specifying the thickness of the brush stroke; and connecting ends of the selected line segments with straight lines to form the first polygon such that the first polygon is a convex polygon.

14. (Original) The method of claim 11 wherein the guideline has two lines specifying the thickness of the brush stroke, wherein furthermore the step of determining a first polygon comprises: selecting a line segment in one of the lines specifying the thickness of the brush stroke, and selecting a point in another of the lines specifying the thickness of the brush stroke; and connecting ends of the selected line segment with straight lines to the selected point to form the first polygon such that the first polygon is a convex polygon.

15. (Original) The method of claim 11 wherein the step of generating end-to-end connected linear segments for one of the lines in the guideline further includes adding a linear segment adjacent to another linear segment at an angle greater than a specified corner threshold.

16. (Original) The method of claim 11 wherein the step of generating end-to-end connected linear segments for one of the lines in the guideline further includes replacing a sharp curve, the sharp curve defined by two adjacent linear segments making an angle with each other of less than a specified corner threshold, by a rounded corner prior to generating end-to-end connected linear segments.

17. (Original) The method of claim 2 wherein the step of generating the first polygon includes truncating a portion of the first polygon overlapping with a second polygon to generate a first convex polygon and a second convex polygon.

18. (Original) The method of claim 17 wherein the step of applying the first transformation uses a modified first segment in the bitmap brush, the modified first segment having proportionally reduced brush thickness to correspond to the first convex polygon, to generate a corresponding image in the first convex polygon.

19. (Currently Amended) A computer-readable medium having a tangible component and having computer-executable instructions embodied thereon for causing a computing device to perform a method for drawing a brush stroke with a bitmap brush, the bitmap brush comprising a bitmap image having pixels, the brush stroke rendered relative to a guideline, the guideline specifying an arbitrary path for the brush stroke, the method comprising:

determining a first polygon on the guideline; determining a first segment in the bitmap brush corresponding to the first polygon on the guideline, the first segment in the bitmap brush comprising a first portion of the bitmap image; applying a first transformation to the first portion of the bitmap image mapped in the first segment in the bitmap brush to generate a corresponding bitmap image in the first polygon on the

guideline to create a first segment of the brush stroke; and displaying the first segment of the brush stroke on a display device.

20. (Previously Presented) The computer-readable medium as in claim 19, wherein the step of determining the first polygon comprises:

making a piece-wise linear approximation of the curved guideline, the piece-wise approximation having a plurality of line segments that are connected end to end; generating sides of the first polygon at a first line segment in the plurality of line segments by drawing lines of specified length at the endpoints of the first line segment at least one specified angle to the first line segment; and connecting the ends of the lines to complete the first polygon.

21. (Previously Presented) The computer-readable medium as in claim 19, wherein the step of generating sides of the first polygon comprises:

generating a first side at a specified angle to a first line segment in the plurality of line segments, the first side having two first endpoints defining a length corresponding to a first desired thickness of the brush stroke at one end of the first line segment;

generating a second side at the specified angle to a second line segment in the plurality of line segments, and wherein the first line segment is adjacent to the second line segment, the second side having two second endpoints defining a length corresponding to a second desired thickness of the brush stroke at one end of the second line segment; and

defining a first polygon having corners defined by the two first endpoints and the two second endpoints.

22. (Original) The computer-readable medium as in claim 19, wherein the step of generating sides of the first polygon comprises:

generating a first side, the first side having two first endpoints defining a length corresponding to a first desired thickness of the brush stroke at one end of the first line segment, wherein, furthermore, the first side dividing the angle between the first line segment in the guideline and an adjacent second line segment in the guideline;

generating a second side, the second side having two second endpoints defining a length corresponding to a second desired thickness of the brush stroke at one end of the second line segment, wherein, furthermore, the second side dividing the angle between the second line segment in the guideline and an adjacent third line segment in the guideline; and

defining a polygon having corners defined by the two first endpoints and the two second endpoints.

23. (Original) The computer-readable medium as in claim 22, wherein the first side bisects the angle between the first line segment in the guideline and the adjacent second line segment in the guideline.

24. (Original) The computer-readable medium as in claim 19 wherein the guideline forms a closed loop.

25. (Original) The computer-readable medium as in claim 19 wherein the first transformation is a bilinear transformation.

26. (Original) The computer-readable medium as in claim 25 wherein one of corner points of the first polygon is used to generate at least one parameter for the bilinear transformation.

27. (Original) The computer-readable medium as in claim 19 wherein the first transformation is a texture mapping.

28. (Original) The computer-readable medium as in claim 19 wherein a desired thickness for the brush stroke at a point on the curved guideline corresponds to a separation between a first line and a second line in the guideline.

29. (Original) The computer-readable medium as in claim 20 wherein the step of making a piece-wise linear approximation of the guideline comprises:

selecting one of the lines in the guideline; and generating end to end connected linear segments, each of the linear segments approximating a segment of the selected line in the guideline.

30. (Original) The computer-readable medium as in claim 29 wherein the step of generating end-to-end connected linear segments further includes dividing a linear segment into additional end-to-end connected linear segments in response to a user selection.

31. (Original) The computer-readable medium as in claim 29, wherein the step of generating end-to-end connected linear segments for one of the lines in the guideline, the guideline having two or more lines wherein the separation between the lines corresponds to a desired thickness of the brush stroke, further includes dividing a linear segment into additional end-to-end connected linear segments if the change in the separation between the two lines over the linear segment is greater than a specified thickness threshold.

32. (Previously Presented) The computer-readable medium as in claim 29 wherein the guideline has two lines specifying the thickness of the brush stroke, wherein furthermore the step of determining a first polygon comprises selecting a line segment in one of the lines specifying the thickness of the brush stroke, and selecting another line segment in another of the lines specifying the thickness of the brush stroke; and connecting ends of the selected line segments with straight lines to form the first polygon such that the first polygon is a convex polygon.

33. (Original) The computer-readable medium as in claim 29 wherein the guideline has two lines specifying the thickness of the brush stroke, wherein furthermore the step of determining a first polygon comprises: selecting a line segment in one of the lines specifying the thickness of the brush stroke, and selecting a point in another of the lines specifying the thickness of the brush stroke; and connecting ends of the selected line segment with straight lines to the selected point to form the first polygon such that the first polygon is a convex polygon.

34. (Original) The computer-readable medium as in claim 29 wherein the step of generating end-to-end connected linear segments for one of the lines in the guideline further includes adding a linear segment adjacent to another linear segment at an angle greater than a specified corner threshold.

35. (Original) The computer-readable medium as in claim 29, wherein the step of generating end-to-end connected linear segments for one of the lines in the guideline further includes replacing a sharp curve, the sharp curve defined by two adjacent linear segments making an angle with each other of less than a specified corner threshold, by a rounded corner prior to generating end-to-end connected linear segments.

36. (Original) The computer-readable medium as in claim 19, wherein the step of generating the first polygon includes truncating a portion of the first polygon overlapping with a second polygon to generate a first convex polygon and a second convex polygon.

37. (Original) The computer-readable medium as in claim 36, wherein the step of applying the first transformation uses a modified first segment in the bitmap brush, the modified first segment having proportionally reduced brush thickness to correspond to the first convex polygon, to generate a corresponding image in the first convex polygon.

38. (Currently Amended) A computerized system for rendering a warped brush stroke using a bitmap brush and a guideline, the bitmap brush comprising a bitmap image having pixels, the guideline specifying an arbitrary path for the brush stroke, the computerized system comprising one or more computer-readable media having one or more tangible components and having encoded thereon a plurality of modules, the plurality of modules comprising:

a linearization module for generating a plurality of line segments approximating a curved line representing the guideline; a sharp corner correcting module for detecting a corner defined by an angle between two adjacent line segments that is smaller than a corner threshold and adding line segments at angles greater than or equal to the corner threshold; a polygon generating module for generating a plurality of polygons corresponding to the plurality of line segments; a polygon corner identifying module for identifying corners of each polygon generated by the polygon generating module; a mapping module for identifying a plurality of segments of the bitmap brush corresponding to the plurality of polygons generated by the polygon generating module, each segment of the bitmap brush having corners corresponding to the corners of a respective polygon; and a rendering module for rendering the plurality of segments of the bitmap brush in the corresponding plurality of polygons to create the brush stroke and for displaying the brush stroke on a display device.

39. (Previously Presented) The system of claim 38 wherein the polygon corner identifying module identifies corners of a polygon by truncating overlaps between adjacent polygons to generate corners of a convex polygon.

REMARKS

Applicant respectfully requests reconsideration of the present application. No new matter has been added to the present application. Claims 1-39 have been rejected in the Office Action. Claims 19 and 38 have been amended. No new claims have been added and no claims have been canceled in this Amendment. Accordingly, claims 1-39 are pending herein. Claims 1-39 are believed to be in condition for allowance and such favorable action is respectfully requested.

Applicants' representative thanks the Examiner for granting a telephonic interview on April 25, 2006. During the interview, the following claim rejections were discussed: (1) the rejections of claims 19-37 under 35 U.S.C. § 101; (2) the rejections of claims 38 and 39 under 35 U.S.C. § 101; and (3) the rejections of claims 1-39 under 35 U.S.C. § 112, first paragraph. With respect to the rejection of claims 19-39 under 35 U.S.C. § 101, proposed amendments to independent claims 19 and 38 were discussed to clarify the subject matter of the claims. Applicants' have amended independent claims 19 and 38 in the present Amendment based on the discussion. With respect to the rejections of claims 1-39 under 35 U.S.C. § 112, first paragraph, Applicants' representative argued that the claim limitations previously added by amendment have clear support in the specification such that the rejections have no reasonable basis and should be withdrawn. Applicants respectfully submit that the pending claims are in condition for allowance.

Amendments to the Claims

Claims 19 and 38 have been amended in this Amendment. Care has been exercised to avoid the introduction of new matter. Support for the amendment to claim 19 may be found in the Specification, for example, at p. 8, line 19 through p. 9, line 12. Support for the

amendment to claim 38 may be found in the Specification, for example, at p. 7, line 16 through p. 9, line 17.

Rejections based on 35 U.S.C. § 101

Claims 19-39 were rejected under 35 U.S.C. § 101 as being directed to non-statutory subject matter. Applicants respectfully submit that the following remarks and corresponding amendments overcome the rejections of claims 19-39 under 35 U.S.C. § 101 and request withdrawal of the rejections.

Referring initially to claims 19-37, the Office Action notes that the claims are directed to a computer-readable medium, which is defined by the Specification of the present application as including a modulated data signal, such as a carrier wave. The Office Action's sole basis for the rejection of the claims is that "[i]n Annex IV Computer-Related Nonstatutory Subject Matter of the Interim guidelines [for Examination of Patent Applications for Patent Subject Matter Eligibility] a signal is held to be nonstatutory subject matter." However, as page 2 of the interim guidelines succinctly points out, "[t]hese Guidelines do not constitute substantive rulemaking and hence do not have the force and effect of law." Rejections are only proper when based on substantive law, not on guidelines issued by the United States Patent and Trademark Office. Accordingly, Applicants respectfully submit that the Office Action's sole reliance on the interim guidelines for the rejection of claims 19-37 under 35 U.S.C. § 101 is improper. Nonetheless, in order to avoid further expense and time delay, Applicants have elected to expedite the prosecution of the present application by amending claim 19 such that the claim is directed to a computer-readable medium having a tangible component. As such, independent claim 19, as amended, does not include a signal per se. Instead, claim 19, as amended, is directed to a product that is a physical object and is clearly statutory subject matter. Applicants

respectfully submit that the amendment overcomes the rejection of independent claim 19 under 35 U.S.C. § 101 and request withdrawal of the rejection. Each of claims 20-37 depend, directly or indirectly, from independent claim 19, and, as such, Applicants submit that the amendment of claim 19 overcomes the rejections of claims 20-37 under 35 U.S.C. § 101 and request withdrawal of the rejections.

Referring now to claims 38 and 39, the Office Action rejected the claims under 35 U.S.C. § 101, indicating that the claims are “nonstatutory since they are programs per se.” In particular, page 4 of the Office Action indicates that the claims include modules and the Specification of the present application defines the modules as programs. While claims 38 and 39 do include modules, the claims are not directed to the modules per se. Instead, each of the claims is directed to a computerized system (e.g., a computing device) and is thus a statutory claim as it is directed to an apparatus or machine. The mere fact that the system of each claim includes program modules does not render each system a program per se. Applicants have amended independent claim 38 to clarify the subject matter of the claim. In particular, claim 38 has been amended to indicate that the claimed computerized system includes one or more computer-readable media having one or more tangible components and having the modules encoded thereon. Applicants respectfully submit that claim 38 is not directed to programs per se but instead is directed to a machine and, as such, is directed to statutory subject matter. Accordingly, Applicants respectfully submit that the above remarks and amendment overcome the rejection of claim 38 under 35 U.S.C. § 101 and request withdrawal of the rejection. Claim 39 depends from independent claim 38, and, as such, Applicants submit that the above remarks and the amendment of claim 38 likewise overcomes the rejection of claim 39 under 35 U.S.C. § 101 and request withdrawal of the rejection.

Rejections based on 35 U.S.C. § 112, first paragraph

Claims 1-39 were rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the written description requirement. Applicants respectfully traverse the rejection of claims 1-39 under 35 U.S.C. § 112, first paragraph as follows and request withdrawal of the rejection.

Initially, it is important to note that an objective standard for ascertaining compliance with the written description requirement is “does the description clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.” *In re Gosteli*, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1989). *See also*, MPEP § 2163.02. With respect to new or amended claims, “[t]he fundamental factually inquiry is whether the specification conveys with reasonable clarity to those skilled in the art that, as of the filing date sought, applicant was in possession of the invention as now claimed. *See, e.g., Vas-Cath, Inc.*, 935 F.2d at 1563-64. 19 USPQ2d at 1117.” MPEP § 2163. “While there is no *in haec verba* requirement, newly added claim limitations must be supported in the specification through express, implicit, or inherent disclosure.” *Id.* “A description as filed is presumed to be adequate, unless or until sufficient evidence or reasoning to the contrary has been presented by the examiner to rebut the presumption. *See, e.g., In re Marzocchi*, 439 F.2d 220, 224, 169 USPQ 367, 370 (CCPA 1971). The examiner, therefore must have a reasonable basis to challenge the adequacy of the written description. The examiner has the initial burden of presenting by a preponderance of evidence why a person skilled in the art would not recognize in an applicant’s disclosure a description of the invention defined by the claims. *In re Wertheim*, 541 F.2d 257, 263, 191 USPQ 90, 97 (CCPA 1976).” *See* MPEP § 2163.04.

As noted on page 4 of the Office Action, independent claims 1, 19, and 38 were each previously amended to include a limitation regarding displaying a brush stroke (or a segment thereof). Page 4 of the Office Action contends that this limitation is subject matter that “was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed had possession of the claimed invention.” Applicants respectfully submit that such finding has no reasonable basis and should be withdrawn.

As set forth in the Specification as filed, the present invention is directed to allowing users to paint or draw a “brush stroke” or a “paint stroke” in a computing environment, such as, for example, in a digital paint system (e.g., virtual painting on a computer). *See, e.g., Specification*, p. 1, lines 5-7 and 13-16; p. 4, lines 2-3; and p.11, lines 14-19. One skilled in the art would readily recognize that such an invention would entail displaying a brush stroke or paint stroke, such as, for instance, on a monitor or other display device. Moreover, the Specification clearly and explicitly indicates that embodiments of the invention include displaying a brush stroke. For example, the Specification states that “[t]his invention relates generally to displaying art and information in computing environment. . . .” *Id.*, p. 1, lines 5-6 (emphasis added). Additionally, the Specification describes an exemplary system for implementing the invention that may include a monitor 47 or other type of display device, as well as other types of output devices, such as a printer. *Id.*, p. 8, line 23 through page 9, line 3. One skilled in the art would readily recognize that such output devices may be used for displaying a brush stroke generated in accordance with embodiments of the present invention. Further, the Specification expressly indicates that the present invention includes rendering and outputting a brush stroke. *Id.*, p. 26,

lines 6-7. Applicants respectfully submit that the Specification unequivocally provides support for the claim limitations.

The Office Action's reasoning for the rejection includes "[t]he specification discusses rendering but rendering is different than displaying, thus, applicants originally filed application fails to convey 'displaying . . .'" Applicants respectfully submit that such reasoning is in error and fails to provide a reasonable basis for the rejection. First, by focusing solely on the inclusion of "rendering" in the Specification, the Office Action ignores the remainder of the Specification, including other portions cited above providing clear support for the amendments. Additionally, the statement fails to recognize that rendering may include displaying. For example, dictionary definitions for "render" include the following: (1) "In computer graphics, to create an image on a display screen from data that describes the scene," McDaniel, George, *IBM Dictionary of Computing*, International Edition, 1994; and (2) "To produce a graphic image from a data file on an output device such as a video display or printer," *Microsoft Computer Dictionary*, 5th ed., 2002. It is clear from these definitions that rendering may include displaying, and, as such, the Office Action's finding is clearly in error.

Page 5 of the Office Action further states that "[t]he specification also does not describe when the rendered brush stroke is displayed if it is displayed." Applicants respectfully submit that this statement also fails to provide any reasonable basis for concluding that the Specification does not provide clear support for the previous amendments to independent claims 1, 19, and 38. The claims and the Specification do not necessitate "when" the brush stroke is displayed. Instead, one skilled in the art would readily recognize that each claim and the Specification encompass displaying the brush stroke in a variety of different manners, including displaying segment by segment or displaying all segments. The Office Action sets forth no

evidence, reasoning, or rational for concluding otherwise. In the Interview Summary dated April 28, 2006, the Examiner stated that “the specification does not discuss the order of the displaying, render first segment and display first segment (claims 1 and 19) or render all segments and then display all segments (claim 38).” This statement is erroneous and misleading in a number of ways. First, the statement fails to recognize that rendering may include displaying as discussed above. More importantly, the statement is reading limitations into the claims that are not present. The claims do not necessitate any “order of the displaying” as implied by the Examiner’s statement. For example, claim 1 merely recites displaying a first segment of a brush stroke. It does not necessitate that the first segment is displayed before or after another segment.

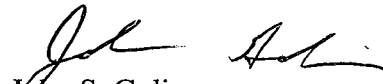
The Office Action fails to provide any reasonable basis for challenging the adequacy of the written description and for concluding that the previous amendments to independent claims 1, 19, and 38 do not have clear support in the Specification. There is no reasonable basis for concluding that the description does not allow one skilled in the art to recognize that Applicants have invented what is claimed. To conclude that one skilled in the art would not recognize that a brush stroke would be displayed (e.g., on a display device) based on the Specification as filed is simply erroneous. The Office Action has not met the initial burden of presenting by a preponderance of evidence why one skilled in the art would not recognize in Applicants’ Specification a description of the invention defined by the claims. Applicants respectfully submit that the rejections of claims 1-39 under 35 U.S.C. § 112, first paragraph cannot be maintained, and request the withdrawal of the rejections.

CONCLUSION

For at least the reasons stated above, claims 1-39 are now in condition for allowance. Applicants respectfully request withdrawal of the pending rejections and allowance

of claims 1-39. If any issues remain that would prevent issuance of this application, the Examiner is urged to contact the undersigned by telephone prior to issuing a subsequent action. It is believed that no fee is due in conjunction with the present amendment. However, if this belief is in error, the Commissioner is hereby authorized to charge any amount required to Deposit Account No. 19-2112.

Respectfully submitted,



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